

## Claims

SUB C17

1. A data collection apparatus, comprising:

2 a sensing unit for attaching to a structure or live subject <sup>NO WEIGHT</sup> for sensing a parameter of  
3 the structure or live subject, said sensing unit comprising a sensor, a first data  
4 storage device, and a transmitting device, said first data storage device for storing  
5 data from said sensor;

6 a control unit separable from said sensing unit, said control unit comprising a data  
7 receiving device and a second data storage device different from said first storage  
8 device, said data receiving device to receive data transmitted from said data sensing  
9 unit, said second data storage device for storing said data received from said sensing  
10 unit; and

11 a triggering device for modifying the storing of data being stored to said first data  
12 storage device or for initiating transmission of data from said sensing unit to said  
13 control unit, wherein said triggering device is controlled by a real time change in  
14 information about the structure or live subject.

2. The apparatus as recited in claim 1, wherein said sensor comprises an accelerometer,  
displacement sensor, strain gauge, pressure gauge, thermometer, flow monitor, heart  
monitor, EKG, EMG, EEG, blood monitor, force gauge, humidity monitor, growth  
rate monitor, ripeness monitor, light intensity gauge, radiation detector, chemical  
detector, corrosion detector, or toxic monitor.

3. The apparatus as recited in claim 2, wherein said sensor comprises an array of  
accelerometers.

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4. The apparatus as recited in claim 2, wherein said sensor comprises a linear or angular accelerometer.

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5. The apparatus as recited in claim 2, wherein said sensor comprises a resistive accelerometer or a piezoelectric accelerometer.

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6. The apparatus as recited in claim 1, wherein said sensor is for detecting vibration. *no weight*

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7. The apparatus as recited in claim 1, wherein said sensing unit is for attaching to an *no weight*  
architectural structure or to a vehicle.

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8. The apparatus as recited in claim 1, wherein said data sensing unit is for wearing by *no weight*  
the live subject.

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9. The apparatus as recited in claim 1, wherein said data sensing unit is for implanting in *no weight*  
the live subject.

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10. The apparatus as recited in claim 9, further comprising a hermetically sealed housing,  
wherein said sensor unit is located in said sealed housing.

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11. The apparatus as recited in claim 10 wherein said housing comprises titanium or  
ceramic.

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12. The apparatus as recited in claim 10, wherein an antenna extends outside said housing  
and is connected to a receiver or transmitter within said housing through a penetration  
in said housing.

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13. The apparatus as recited in claim 1, further comprising a microprocessor. *connected to what?*

- 1 14. The apparatus as recited in claim 13, wherein said microprocessor is in said sensor  
2 unit and wherein said first storage device is connected to said receiver and to said  
3 sensor through said microprocessor.
- 1 15. The apparatus as recited in claim 13, wherein said microprocessor comprises said  
2 triggering device.
- 1 16. The apparatus as recited in claim 1, wherein said sensor unit further comprises a  
2 power supply.
- 1 17. The apparatus as recited in claim 16, wherein said power supply comprises a  
2 rechargeable battery or fuel cell.
- 1 18. The apparatus as recited in claim 17, further comprising a circuit for recharging said  
2 battery by inductive coupling.
- 1 19. The apparatus as recited in claim 18, further comprising a hermetically sealed  
2 housing, wherein said sensor and said circuit for recharging is in said housing and  
3 said coupling is through said housing.
- 1 20. The apparatus as recited in claim 18, wherein said circuit for recharging is in the  
2 housing and the coupling is outside the housing.
- 1 21. The apparatus as recited in claim 1, wherein said sensing unit further comprises an RF  
2 receiver for receiving a signal from said triggering device.
- 1 22. The apparatus as recited in claim 1, wherein said transmitting device is an RF  
2 transmitter.

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3 23. The apparatus as recited in claim 1, wherein said control unit is capable of sending a  
4 timing signal to said sensor unit.

1 24. The apparatus as recited in claim 23, wherein said timing signal is for synchronizing a  
2 plurality of said sensors or for synchronizing a sensor with another apparatus.

1 25. The apparatus as recited in claim 23, wherein said first storage device is connected to  
2 receive and record said timing signal.

1 26. The apparatus as recited in claim 1, wherein said first data storage device continually  
2 records.

1 27. The apparatus as recited in claim 1, wherein said first storage device is controlled by  
2 data received by said sensor.

1 28. The apparatus as recited in claim 27, wherein when said data received by said sensor  
2 reaches a threshold, data in said first storage device is retained.

1 29. The apparatus as recited in claim 28, wherein said retained data includes data received  
2 after said sensor reaches said threshold.

1 30. The apparatus as recited in claim 1, further comprising a feedback device for  
2 adjusting said parameter based on said data.

1 31. The apparatus as recited in claim 30, wherein said feedback device is located in said  
2 sensing unit.

1 32. The apparatus as recited in claim 30, wherein said feedback device is an active  
2 damping element to reduce vibration in response to measured excessive vibration.

*claims 30 and 1  
do not require  
measuring vibration*

*→ a different profile  
sampling is  
requested by  
processor  
attached  
to unit?*



- 1 39. A method of collecting data, comprising the steps of:
- 2
- 3 a) providing a sensing unit <sup>is weight</sup> for attaching to a structure or live subject for sensing a
- 4 parameter of the structure or live subject, said sensing unit comprising a sensor,
- 5 a first data storage device, and a transmitting device, said first data storage
- 6 device for storing data from said sensor;
- 7 b) providing a control unit separable from said sensing unit, said control unit
- 8 comprising a data receiving device and a second data storage device different
- 9 from said first storage device, said data receiving device to receive data
- 10 transmitted from said data sensing unit, said second data storage device for
- 11 storing said data received from said sensing unit; and
- 12 c) providing a trigger signal for modifying the storing of data being stored to said
- 13 first data storage device or for initiating transmission of data from said sensing
- 14 unit to said control unit, wherein said trigger signal is a real time change in
- 15 information about the structure or live subject.

ADD A1  
ADD C27